

New WWW Database of Self-consistent Physical Disk Models for SED Analysis

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We announce a catalog of models of irradiated accretion disks around young stars based on the modeling techniques by D'Alessio et al. The model includes disk heating by stellar radiation (considered in a shorter wavelength regime with respect to the disk's own radiation field), viscous dissipation due to accretion (described using the alpha prescription) and ionization by energetic particles (cosmic rays and radioactive decay). The energy in the disk model is transported by radiation, convection, and a turbulent alpha-flux. The disk is assumed axisymmetric, with gas and dust well mixed. The opacity is calculated taking into account both dust and gas. For the gas, the populations of selected molecules are calculated assuming local thermodynamic equilibrium. For the dust, we explore different grain size distributions. The WWW catalog includes disk models for different central stars, disk sizes, inclinations, dust content, and mass accretion rates. We will show how IRAC synthetic colors from the models reproduce new Spitzer data of young star-forming clusters, hence allowing for a detailed physical characterization of their protoplanetary disks, and will demonstrate how to use the library to get the most out of newly-observed Spitzer SEDs of young stars.

